

# INTERNATIONAL PATENT COOPERATION TREATY

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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)

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see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCTUS2004/035807

International filing date (day/month/year)  
27.10.2004

Priority date (day/month/year)  
28.10.2003

International Patent Classification (IPC) or both national classification and IPC  
A01N5720

Applicant  
WASHINGTON STATE UNIVERSITY RESEARCH FOUNDATION

1. This opinion contains indications relating to the following items:

- ☒ Box No I Basis of the opinion
- ☐ Box No II Priority
- ☐ Box No III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No IV Lack of unity of invention
- ☒ Box No V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No VI Certain documents cited
- ☒ Box No VII Certain defects in the international application
- ☐ Box No VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2004/035807

**Box No. I Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	2,3,7,11,13-18,20-36
	No: Claims	1,4-6,8-10,12,19
Inventive step (IS)	Yes: Claims	20-36 (part)
	No: Claims	1-18,20-22(part),25-36(part)
Industrial applicability (IA)	Yes: Claims	1-36
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

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**Box No. VII Certain defects in the international application**

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

1). Sanogo et al., 2000, (= D1 of the International Search Report, ISR) disclose the effects of various herbicides, including glyphosate, on *Fusarium solani* and 'Sudden Death Syndrome' in glyphosate tolerant soybeans. Glyphosate is applied at normal and double recommended application rates, i.e. at 0,84 and 1,68 kg/ha.

It appears from D1, that these application rates of glyphosate do not result in a reduced disease severity or in enhanced plant yields as indicated by plant dry weights (cf. D1, page 63 and page 64, col. 2, par. 2 - page 65, par. 2).

Bradley et al., 1997, (= D2 of the ISR) make similar observations with respect to the treatment of *Rhizoctonia* inoculated glyphosate tolerant soybeans with glyphosate at an application rate of 1,68 kg/ha.

It thus appears, that the subject-matter of present claims 1, 4 - 6, 8- 10, 12 and 19 is not novel with respect to this prior art (Art. 33 (2) PCT).

Harikrishnan & Yang, 2002, (= D3 of the ISR) further confirm, that treatment of *Rhizoctonia* infected glyphosate tolerant soybeans with glyphosate at an application rate of 0,84 kg/ha - which is only marginally below the lowest rate as applied in the present application- does not result in an effective disease reduction and/or an enhanced plant yield.

It thus appears from D1 - D3, that the problem underlying the present application (to provide a method for reducing diseases in glyphosate tolerant soybeans or wheat) has not been solved over the whole scope claimed by the proposed solution (treating the crop with glyphosate at a rate of greater than 1,0 kg/ha).

The subject-matter of present claims 1 - 12 and 14 - 18, insofar as novel, hence is not considered to be based on an inventive step (Art. 33 (3) PCT).

2). It also appears, that the application, at least insofar as relating to the treatment of infected glyphosate tolerant soybeans, does not disclose the invention in a way that is sufficiently clear and complete to be carried out by the skilled artisan: it cannot be derived from the application documents as filed which measures have to be taken to obtain fundamentally different results by an application that essentially is identical with the ones disclosed in D1 and D2. The present application, insofar as relating to the treatment of glyphosate tolerant soybeans, hence does not meet the requirements of Art. 5 PCT (see also WIPO-PCT Guidelines of March 2004, §§ 4.12 and 4.13).

3). Zhou et al., 2003, (= D4 of the ISR) disclose, that treating glyphosate tolerant wheat

with glyphosate at application rates of up to 3,6 kg/ha, results in enhanced crop yields as compared to the treatment of non-glyphosate tolerant wheat (D4, page 1074, col. 1, par. 3 - col. 2, par. 1).

The harvested crop as defined by present claim 19 (insofar as relating to wheat) is not different from the crop as treated by the method of D4. Claim 19 hence is not novel (Art. 33 (2) PCT).

4). Example 7 of the present application demonstrates, that treating stripe rust infected glyphosate tolerant wheat with glyphosate at application rates of 0,50 - 1,50 kg/ha in various application regimes results in a reduction in stripe rust symptoms and enhanced crop yields.

Although the fungicidal effects of glyphosate and other herbicides are known from the prior art (see, e.g., D1: page 61, col. 2, par. 2-3 and Lee et al., 2000 (= D5 of the ISR): page 710, col. 2, par. 3 - page 711, col. 1, par. 2), it is not disclosed or suggested in the available prior art, that these advantageous effects could be obtained by treating infected glyphosate tolerant wheat with glyphosate. In fact, the prior art teaches away from the use of glyphosate as an antifungal agent on glyphosate tolerant crops as can be seen in D1 - D3 and D5.

The subject-matter of claims 1 - 18 and 20 - 36, insofar as relating to methods of treating glyphosate resistant wheat with glyphosate, hence is considered to be novel and based on an inventive step (Art. 33 (2) and (3) PCT).

Insofar as claims 20 - 22 and 25 - 32 define a method in which an unspecified herbicide is used, said claims are not considered to be based on an inventive step, since it can be seen from examples 2 - 6, that treatment with other herbicides does not result in an enhanced crop yield. Example 6 moreover demonstrates, that treatment of *Rhizoctonia* or *Gaeumannomyces* infected glyphosate tolerant wheat with Buctril/Harmony results in a reduced crop yield. The problem underlying said claims 20 - 22 and 25 - 32 thus has not been solved over the whole scope claimed, contrary to the requirements of Art. 33 (3) PCT.

5). Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 - D5 is not mentioned in the description, nor are these

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AUTHORITY (SEPARATE SHEET)**

International application No.

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document/s identified therein.